REMARKS

Claims 2 and 13 have been cancelled. Claims 1, 9, 12, 14-17, 20 and 21 have been amended. New claims 23 and 24 have been added to this application.

Claim Rejections - 35 U.S.C. § 112

Claims 1, 9 and 12 stand objected to under 35 U.S.C. 112 for the use of the relative terms "closely," "densely," "firm," "fine" and "closely resemble." Applicant has deleted the terms "closely," "densely," "firm," "fine" and "closely resemble" from these claims, as they are not necessary in order to define the invention. Applicant has used the term "simulate" in Claim 12, as in Claim 1.

Claim 9 stands objected to under 35 U.S.C. 112 for the use of the phrase "sand or similar particulate material." Applicant has amended Claim 9 and Claim 21 (which included the same language) to rephrase this to read "particulate material." Accordingly, new dependent Claims 23 and 24 have been added to further define the particulate material as sand.

Claim Rejections - 35 U.S.C. § 103

Claims 1, 10, 12 and 22 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,505,960 issued to Leffingwell in view of U.S. Patent No. 4,830,798 issued to Maeda. In order to expedite prosecution, Applicant has amended Claims 1 and 12 to clarify these claims to include the density and thickness information from former dependent Claims 2 and 13, which have now been cancelled as redundant. As a result of this, Claims 14-17 have now each been made dependent upon Claim 12.

Applicant respectfully submits that the combined teachings of the Leffingwell and Maeda references, taken as a whole, would not have suggested the invention as now claimed to one of ordinary skill in the art. Applicant has noticed (since the previous submission) that

the Leffingwell reference does disclose polypropylene as a material selection for an artificial turf underpad (col. 4, line 43), and therefore wishes to correct the previous assertion that this was not among the listed materials in the Leffingwell reference. However, the combined teachings of the Maeda reference, that foamed articles made from polypropylene have been widely used as shock absorbing packaging materials (col. 1, lines 16-23), with the basic artificial turf construction of pile layer and underpad from the Leffingwell reference, still do not teach the artificial turf having the underpad density and thickness properties as now claimed. Specifically, there is no combination of teachings from the Leffingwell and Maeda references that suggests that certain measured ranges for underpad density and thickness have an effect on how an artificial turf including that underpad will behave relative to the desired activity taking place upon the turf.

As examples of this, the Examiner's attention is directed to the preferred 1/2 inch - 2 inch underpad thickness for a golf green (p. 6, lines 1-2), the preferred underpad thickness of at least 1 inch for a golf fairway (p. 6, line 6) and a measured satisfactory underpad density for a golf green of approximately 2.36 pounds per cubic foot (p. 6, line 21) of the present invention. As the variety of games played on the surface varies according to the list shown at p. 7, lines 1-10, both the underpad density and thickness can be adjusted within the claimed ranges to closely simulate the desired feel, action or rebound for that particular activity. The combined teachings of the Leffingwell and Maeda references simply do not teach this principle.

There is also no suggestion in the Maeda reference that the teachings of shock absorbance properties for packaging materials could be combined with the much-different environment of an artificial turf underpad as shown in Leffingwell. In this regard, the Examiner's attention is directed not only to the specifically measured underpad density and thickness properties mentioned above, but also taking into account other factors inherent to an artificial turf, such as weather resistance (p. 1, line 13), the presence of a firm underlying

ground support surface (p. 1, lines 14 and 17), the need to withstand the force of the sand blast treatment of the carpet (p. 5, lines 18-20), and the need to withstand and properly respond to the varied forces exerted from all persons, sporting equipment and other items placed upon the artificial turf surface for each of the activities mentioned at p. 7, lines 1-10.

For the above reasons, it is respectfully submitted that the claims, as now amended, constitute patentable subject matter over the Leffingwell and Maeda references, and it is respectfully requested that the rejection based on these references be withdrawn.

Claims 2-8 and 13-19 stand rejected under 35 U.S.C. 103(a) as being unpatentable over the cited Leffingwell and Maeda patents, as applied to Claim 1 above, and further in view of U.S. Patent No. 4,931,477 issued to Shiiki et al and U.S. Patent No. 5,035,275 issued to Yamaguchi. Claim 2 has been cancelled through this Amendment. With respect to Claims 3-8, Applicant respectfully submits that the above amendment to Claim 1 and comments set forth above are also relevant to this rejection. Further, the additional combination of the teachings of the Shiiki et al and Yamaguchi references still does not yield the present claimed invention, as now amended. Specifically, the Shiiki et al reference was cited by the Examiner (at p. 6 of the first Office Action, at para. 15) for teaching polypropylene bead densities. However, since the density adjustment in the Shiiki et al reference is only contemplated for adjusting the weight of the molded foam to reduce storage and transporting costs (Abstract, col. 2, lines 6-8 and col. 4, lines 16-18), the combination of teachings from the Leffingwell, Maeda and Shiiki et al references still fails to suggest that an underpad formed of a sheet of a molded, open cell, expanded, resilient polypropylene material in combination with a synthetic grass carpet produces an effect which very closely simulates a natural grass surface, while maintaining the characteristics discussed above. The further combination of the teachings of the Yamaguchi reference still fails to suggest that an underpad formed of a sheet of a molded, open cell, expanded, resilient polypropylene material in combination with a synthetic grass carpet produces an effect which very closely simulates a natural grass surface, while

maintaining the characteristics discussed above. Specifically, the portion of the Yamaguchi reference that deals with plastic foam moldings teaches a method for controlling the pyrolysis rate and thermal shrinkage of a plastic foam molding (col. 1, lines 50-52). The further combination of these method considerations with the teachings of the Leffingwell, Maeda and Shiiki et al references still does not teach the invention as now claimed.

For the above reasons, it is respectfully submitted that the claims, as now amended, constitute patentable subject matter over the combination of teachings of these four references, and it is respectfully requested that the rejection based on these references be withdrawn.

Claims 9, 20 and 21 stand rejected under 35 U.S.C. 103(a) as being unpatentable over the cited Leffingwell and Maeda patents, as applied to Claim 1 above, and further in view of U.S. Patent No. 5,373,667 to Lemieux (the present Applicant's prior patent). Applicant respectfully submits that the above amendment to Claim 1 and comments set forth above are also relevant to this rejection. Applicant's prior patent disclosed a method of treating grass-like blades of a synthetic turf including a sandblasting step, but did not contemplate the use of an underpad as now claimed. For this reason, it is respectfully submitted that the additional combination of Applicant's prior patent to the teachings of the Leffingwell and Maeda patents, as described above, still does not yield the combination claimed in the present Claims 9, 20 and 21, and it is respectfully requested that the rejection based on this additional reference also be withdrawn.

Claim 11 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the cited Leffingwell and Maeda patents, as applied to Claim 1 above, and further in view of U.S. Patent No. 5,820,475 to Luna. Applicant respectfully submits that the above amendment to Claim 1 and comments set forth above are also relevant to this rejection. As the Luna reference is primarily directed to a compact golf ball teeing machine, which does not disclose information about specific properties of a synthetic grass surface, it is respectfully submitted that the

further combination of the teachings of the Luna reference with the teachings of the Leffingwell and Maeda patents, as described above, still does not yield the combination set forth in the present Claim 11. For this reason, it is respectfully requested that the rejection based on this additional reference also be withdrawn.

Should the Examiner have any questions, or wish to discuss this application further, she is invited to contact the undersigned attorney directly at (248) 641-1600.

Respectfully submitted,

Date: January 30, 2003

By: Garrett C. Donley

Garrett C. Donley
Reg. No. 34,579
Attorney for Applicant

HARNESS, DICKEY & PIERCE, P.L.C.
P.O. Box 828
Bloomfield Hills, MI 48303
(248) 641-1600
GCD/sed

ATTACHMENT 1 - CLAIM CHANGES (MARKED VERSION)

1. (Twice Amended) A synthetic turf surface for simulating golf and other natural grass game playing surfaces formed of a synthetic grass carpet having a flexible base sheet with [closely] spaced apart, upright strands of plastic material intended to form artificial grass blades secured to the sheet, and with the strands forming [a densely packed,] an exposed upper surface and said base sheet being positioned upon a resilient cushion underpad arranged upon a [firm] support surface, the improvement comprising:

said underpad being formed of a sheet of a molded, open cell, expanded, resilient polypropylene material formed from polypropylene beads being of density of between about 1.3 to 2.8 pounds per cubic foot and said underpad being of a thickness of between about 1/4 inch to 12 inches;

whereas said carpet and its supporting underpad [closely] simulate a portion of a natural grass surface.

9. (Twice Amended) A synthetic turf surface as defined in claim 1 and including the upper end portions of said strands being shredded into [fine] silvers which are [densely] matted and intertwined, and with a layer of [sand or similar] particulate material applied upon the upper surface of the base sheet and generally beneath the intertwined slivers and substantially filling the interstices between the strands and said layer is covered by said intertwined slivers.

12. (Once Amended) A synthetic rooftop or patio or deck surface formed of a synthetic grass carpet having a flexible base sheet with [closely] spaced apart, upright strands of plastic material secured to the sheet, and with the strands forming [a densely packed,] an exposed upper surface and said base sheet being positioned upon a resilient cushion underpad arranged upon a [firm] support surface, the improvement comprising:

said underpad being formed of a sheet of a molded, open cell, expanded, resilient polypropylene material formed from polypropylene beads being of density of between about 1.3 to 2.8 pounds per cubic foot and said underpad being of a thickness of between about 1/4 inch to 12 inches;

whereas said carpet and its supporting underpad [closely resemble] simulate a portion of a natural grass surface.

14. (Once Amended) A surface as defined in claim [13] 12, said polypropylene material being formed from polypropylene beads having a density of approximately between about 1.3 and 1.9 pounds per cubic foot and said polypropylene material having a thickness of approximately between about 1 inch to 2 inches whereby the surface resembles a simulated natural grass surface.

15. (Once Amended) A surface as defined in claim [13] 12, said polypropylene material being formed from polypropylene beads having a density of approximately 1.9 pounds per cubic foot and said polypropylene material having a thickness of approximately between about 1/2 inch to 1 inch thickness.

16. (Once Amended) A surface as defined in claim [13] 12, said polypropylene material being formed from polypropylene beads having a density of approximately 1.3 pounds per cubic foot and said underpad being approximately between about 1 to 2 inches thick.

17. (Once Amended) A surface as defined in claim [13] 12, said polypropylene material being formed from polypropylene beads having a density of approximately 1.9

pounds per cubic foot and the thickness of the underpad being approximately between about 1 to 2 inches.

20. (Once Amended) A surface as defined in claim 12 and including the upper end portions of said strands being shredded into [fine] silvers which are [densely] matted and intertwined.

21. (Once Amended) A surface as defined in claim 12 and including the upper end portions of said strands being shredded into [fine] silvers which are [densely] matted and intertwined, and with a layer of [sand or similar] particulate material applied upon the upper surface of the base sheet and generally beneath the intertwined slivers and substantially filling the interstices between the strands and said layer is covered by said intertwined slivers.